

SHOW ME YOUR SMILE!

The Oral Health of Missouri's Children Executive Summary



Julia M. Eckstein, Director

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Missouri Department of Health and Senior Services
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Oral Health Program

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Prepared in collaboration with Kathy Phipps, DrPH, ASTDD Data Coordinator, and the Missouri Oral Health Program
Grant application and study design written by Moncy Mathew, DBS, MPH
Graphic design by Kristi Hart, Office of Community Health Information, Department of Health and Senior Services



Oral Health of Missouri's Children Executive Summary

Summary and Findings

Dental caries (tooth decay) is an infectious disease process affecting both children and adults. It is probably the most prevalent – yet the most preventable – disease known to man. By the age of 18, about 80% of children in the United States have experienced dental disease in the form of caries.

While most dental disease, including tooth decay, is preventable, the prevalence of decay in Missouri's children has increased over the last five years, and certain groups continue to suffer disproportionately from dental disease – including both low-income and minority children. Two major factors affect an individual's overall oral health status: their disease rate and their ability to access and obtain dental treatment. Unfortunately, those individuals at highest risk of dental disease are also the least likely to have access to routine professional dental care.

The public perception – especially among those who can afford dental care or have dental insurance – is that tooth decay is a natural and minor occurrence that deserves little attention or dollars. However, if left untreated, tooth decay can lead to needless pain and suffering; difficulty in speaking, chewing, and swallowing; lost school days; increased cost of care; and loss of self-esteem. In 1996, children ages 5 to 17 years missed 1,611,000 school days due to acute dental problems – an average of 3.1 days per 100 students.¹ The good news is that most oral diseases are preventable. Some of the methods to prevent tooth decay include dental sealants, drinking fluoridated water, using toothpaste that contains fluoride, limiting sugar intake, and having access to dental care.

In order to obtain information on the oral health of Missouri children, a representative sample of third grade children attending elementary schools in the state received a dental screening in school year 2004–05. Information from the Show Me Your Smile Survey can be used to develop policy recommendations designed to improve the oral health of Missouri's elementary school children. To share what was learned through the survey, this report has been organized into seven key findings, and for each finding data is presented in terms of graphs and tables. We hope this information is both informative and useful.

Key Findings

- Tooth decay is a significant health problem for Missouri's children.
- Many children in Missouri are in need of dental care.
- Many children in Missouri are attending school with infection or pain from dental disease.
- While dental sealants are a proven method for preventing decay, the majority of Missouri's third grade children do not have access to this valuable preventive service.
- African-American children's oral health status and access to preventive dental sealants is less than the general population.
- The oral health status of children from low-income schools and access to preventive dental sealants is less than the general population.
- Considerable progress must be made if Missouri is to meet the Healthy People 2010 oral health objectives.

INTRODUCTION

"The mouth reflects general health and well-being."

Former Surgeon General David Satcher, 2001

Dental caries (tooth decay) is the single most common chronic disease of childhood, occurring five to eight times more frequently than asthma, the second most common chronic disease in children.² Although preventable, tooth decay affects more than half of all children by the third grade and by the time students finish high school, 80% have caries.³ Tooth decay is not simply a hole in a tooth — if left untreated it can lead to needless pain and suffering; difficulty in speaking, chewing and swallowing; lost school days; increased costs of care; and loss of self-esteem. In 1996 students ages 5 to 17 years missed 1,611,000 school days due to acute dental problems — an average of 3.1 days per 100 students.⁴

While efforts have been made to impact the prevalence of tooth decay among U.S. school-aged children, it remains a significant problem in some populations — particularly certain racial and ethnic groups and poor children.⁵ National data indicate that 80% of tooth decay in children is concentrated in 25% of the child population.⁶ Poor people and racial/ethnic minority groups have more untreated oral disease than does the population as a whole. According to national data, poor African-American children are about three times more likely to have untreated decay compared to a higher income non-Hispanic white child.

We hope that by recognizing and understanding the oral health needs of Missouri's children, we will be able to contribute to policies that will ensure all children receive the oral health care they need. The answers to effective policies to protect children's oral health lie in a few sound principles outlined in the 2000 *Oral Health in America: A Report of the Surgeon General*. Some of the approaches to promote oral health include:

- Change perceptions regarding oral health and disease so that oral health becomes an accepted component of general health.
- Build an effective health infrastructure that meets the oral health needs of all Americans and integrates oral health effectively into overall health.
- Remove known barriers between people and oral health services.
- Use public-private partnerships to improve the oral health of those who still suffer disproportionately from oral diseases.

This needs assessment demonstrates that we still face many barriers to improving the oral health of children in Missouri. We are seeing more dental disease among children, and we have fewer dentists in the state than we need to provide essential preventive and restorative services. In order to reverse these trends, we need to mobilize resources, including both public and private oral health care providers.

METHODS AND RESULTS

In order to document the oral health needs of children in Missouri, oral health screenings were completed during the school year 2004–2005 at 113 randomly selected elementary schools plus in 30 State Schools for the Severely Handicapped. A representative sample of Missouri's third graders received a dental screening using the protocols and diagnostic criteria developed by the Association of State and Territorial Dental Directors (ASTDD). These criteria were developed to assure that oral health screening data is collected in a consistent and comparable manner.⁷ Basic Screening Surveys: An Approach to Monitoring Community Oral Health. Association of State and Territorial Dental Directors, 2003. Available at: www.astdd.org.

Eleven screeners completed all of the screenings using disposable gloves, disposable mouth mirrors, and penlights.

A total of 3,525 third grade children in elementary schools were screened. About half of the children (49%) were male, 84% were white and 9% were African-American. The majority of the third graders screened (97%) were either 8 or 9 years of age. A total of 442 children in State Schools for the Severely Handicapped were screened. More than half of the children screened (59%) were male, 74% were white and 19% were African-American. The children screened ranged in age from 5 to 21 years with a mean age of 13 years. A total of 832 sixth grade children were screened using a convenience sample of 48 elementary schools. Because a convenience sample (rather than a probability sample) was used, the results of the sixth grade screening should be viewed with caution. About half of the children (49%) were male, 78% were white and 17% were African-American. The majority of the sixth graders screened (96%) were either 11 or 12 years old.

To share the results of the oral health screenings, seven key findings are presented with data and graphs to support each finding.

KEY FINDING 1: Tooth decay is a significant health problem for Missouri's children.

More than half of Missouri's third graders (55%) have a history of tooth decay, which means that they had at least one tooth that was either decayed or had been filled because of the decay. This is **five times higher** than the prevalence of the next most common chronic disease of childhood — asthma (11%). Among children with special health care needs, 46% have a history of tooth decay, and among the convenience sample of sixth grade children screened, 45% had a history of tooth decay.

It should be noted that the manifestations of tooth decay in young children go beyond pain and infection. If left untreated, tooth decay may affect a child's ability to eat, communicate, and learn.⁸ In addition, research has shown that preschool children with advanced decay weigh significantly less than their counterparts and are more likely to weigh less than 80% of their ideal weight — a diagnostic criterion for failure to thrive.⁹

KEY FINDING 2: Many children in Missouri are in need of dental care.

More than 1 in 4 third graders and more than 1 in 5 special health care needs children in Missouri has untreated tooth decay. Of the sixth graders screened, 22% had untreated tooth decay.

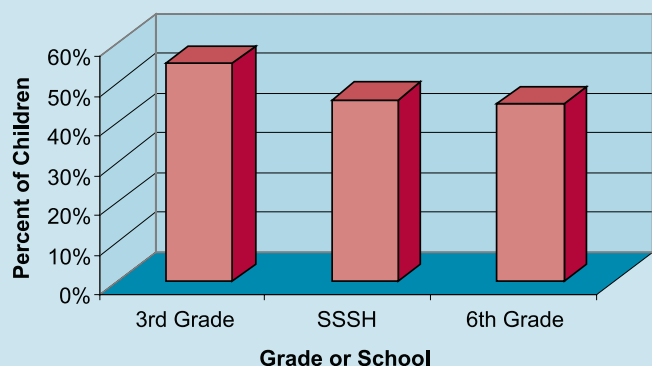
Due to their young age, treatment of preschool children with decay is often provided in a hospital-based operating room under general anesthesia. Because of this, the cost of treatment can be enormous and the risk to the child can be substantial. Information from Iowa's Medicaid program provides valuable information on the cost of dental treatment for young children. In Iowa, 29% of all Medicaid dental reimbursements for children under age 6 years were spent on dental care provided in hospital operating rooms. On average, the total cost to the Iowa Medicaid program of treating a child's dental disease in the hospital under general anesthesia was \$2,000 in 1994.¹⁰ National Medicaid cost estimates for the hospital treatment of early childhood tooth decay are estimated to be \$100 to \$200 million annually.¹¹

It should be noted that information for this report was obtained through a dental screening rather than a complete diagnostic dental examination. Dental radiographs (x-rays) were not taken and more advanced diagnostic tools were not used. For this reason, it is assumed that **the proportion of children needing dental care is actually an underestimation.**

Oral Health of Missouri's Children

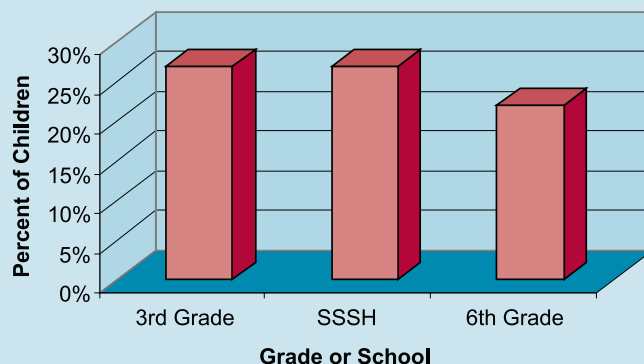
Key Finding 1

Percent of Children with a History of Tooth Decay



Key Finding 2

Percent of Children with Untreated Tooth Decay



KEY FINDING 3: Many children in Missouri are attending school with infection or pain from dental disease.

Of particular importance is the fact that 5% of the third grade children are in urgent need of dental care due to pain or infection resulting from tooth decay. This could mean that more than 2,250 Missouri third graders have pain or infection because of tooth decay. Almost 12% of parents reported that their child had missed school because of dental pain.

Among the special health care needs students, ranging in age from 5 years to 21 years, the need for urgent dental care because of pain or infection ranged from 4% among those between 5 and 14 years old to 9% among those between 15 and 21 years old.

The sixth grade oral health survey was a convenience sample and not representative of all sixth graders in Missouri. Of the sixth graders screened, 3% were in need of urgent dental care because of pain or infection.

KEY FINDING 4: While dental sealants are a proven method for preventing decay, the majority of Missouri's third grade children do not have access to this valuable preventive service.

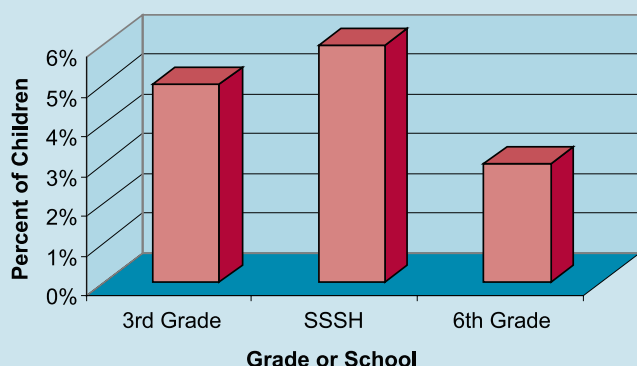
Dental sealants are a plastic coating applied to the chewing surfaces of the back teeth. They are a safe, effective way to prevent tooth decay among schoolchildren. Sealants have been shown to significantly reduce a child's risk for having untreated decay. In some cases, sealants can even stop decay that has already started.¹² In Missouri, only 29% of the third grade children screened and only 30% of the sixth grade children had dental sealants. Even more disturbing is the sealant rate for special health care needs children; only 8% of the children screened in the State Schools for Severely Handicapped had dental sealants. All of these figures are substantially lower than the *Healthy People 2010* objective of 50% with sealants.

What is *Healthy People 2010*? *Healthy People 2010* is a set of health objectives for the nation to achieve over the first decade of this century. The objectives were developed through a broad consultation process, built on the best scientific knowledge and designed to measure programs over time. By using *Healthy People 2010* objectives, communities can measure how the health of their community compares to national objectives.

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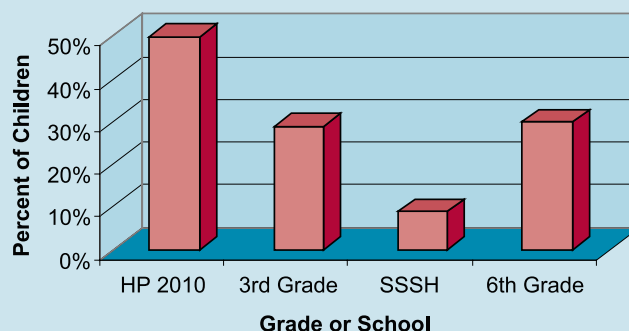
Key Finding 3

Percent of Children with Need for Urgent Care



Key Finding 4

Percent of Missouri Children with Sealants Compared to Healthy People 2010 Goal



KEY FINDING 5: African-American children's oral health status and access to preventive dental sealants is less than the general population.

Compared to white children, African-American children had a significantly higher prevalence of decay experience and untreated decay, but a significantly lower prevalence of protective dental sealants. In addition, more than twice as many African-American children were in need of urgent care because of pain or infection (8% vs. 3%).

- The percentages of African-American third graders with untreated decay and needing dental treatment were twice that of white children.
- The percentage of African-American third graders with sealants (25%) is less than that of white children (29%).

KEY FINDING 6: The oral health status of children from low-income schools and access to preventive dental sealants is less than the general population.

Eligibility for the free and/or reduced price lunch (FRL) program is often used as an indicator of overall socioeconomic status. While information on eligibility for the FRL program is not available at the student level it is available at the school level. The schools taking part in the oral health survey were categorized into four income levels based on the percentage of children eligible for the FRL program.

- Higher income: less than 25% of students eligible
- Moderate income: 25% - 49.9% of students eligible
- Middle-low income: 50% - 74.9% of the students eligible
- Low income: 75% or more of the students eligible

Compared to children from higher income schools (<25% eligible for free or reduced price meals), children in low-income schools (≥ 75% eligible for free or reduced price meals) had a significantly higher prevalence of decay experience and untreated decay, plus a lower prevalence of dental sealants.

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Key Finding 5

Oral Health Status of Missouri's Third Grade Children Stratified by Race		
Variable	White(n=2,900)	African-American(n=326)
	Percent	Percent
Percent with decay experience	52	63
Percent with untreated decay	22	42
Percent with dental sealants	29	25
Percent needing urgent treatment	3	8

Key Finding 6

Oral Health Status of Missouri's Third Grade Children Stratified by FRL Status of School				
Variable	Percent of Students Participating in FRL Program			
	< 25.0%	25.0-49.9%	50.0-74.9%	≥75%
Number of schools	23	40	34	15
Number of children screened	830	1,611	825	242
Percent with caries experience	46	54	62	63
Percent with untreated decay	21	27	31	37
Percent with dental sealants	36	27	22	30
Percent needing treatment	21	28	29	45
Percent needing urgent treatment	2	5	7	8

KEY FINDING 7: Considerable progress must be made if Missouri is to meet the *Healthy People 2010* oral health objectives.

The National Oral Health Objectives for the Year 2010 (*Healthy People 2010*) outline several oral health status objectives for young children. For 6- to 8-year-old children there are three primary oral health status objectives:

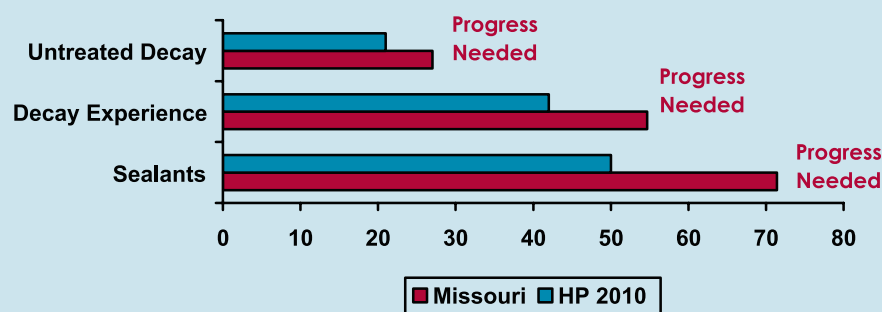
- To decrease the proportion of children who have experienced tooth decay in permanent or primary teeth to 42%.
- To decrease the proportion of children with untreated tooth decay in permanent or primary teeth to 21%.
- To decrease the proportion of 8-year-olds *without* protective sealing of the occlusal (chewing) surfaces of permanent molar teeth to 50%.

It should be noted that the Missouri Oral Health Survey was not designed to be representative of 6- to 8-year-old children, with the majority of children screened being 8 to 9 years of age. Fifty-five percent of the third graders screened in Missouri had experienced tooth decay – substantially higher than the HP2010 objective of 42%. Twenty-seven percent of Missouri's third graders had untreated tooth decay compared to the HP2010 objective of 21%, and 71% of Missouri's third graders *did not* have dental sealants compared to the HP2010 objective of 50%.

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Key Finding 7

Oral Health of Missouri's Third Grade Children Compared to HP 2010



Trends: 2000 to 2005

It should be noted that passive consent was used to screen the children in 2000 while positive consent was used to screen the children in 2005. Requiring positive consent typically results in fewer participants in the screening process. For both screening periods, schools were randomly selected based on the percentage of students eligible for free and reduced lunch status. While the methodologies were not exactly consistent for both screening periods, the projects have provided baseline data that is useful in understanding the oral health status of Missourians and in knowing how to move forward to collect consistent data and work to resolve disparities and overcome the oral health problems present in our state.

The percent of children with untreated tooth decay increased in five of the six regions of the state.

- Untreated decay increased by approximately 5% of children screened in the northeast, northwest and central Missouri regions.
- Untreated decay increased by 10% in the east or St. Louis region.
- The smallest increase in untreated decay, approximately 2% of children, occurred in the southwest region.
- The southeast region of the state had a 14% decrease in untreated tooth decay.

The percent of children with dental sealants has increased in all six regions of the state.

- Dental sealants increased by 13% of children screened in the northeast and northwest Missouri regions.
- Dental sealants increased by 15% of children screened in the central Missouri region.
- Dental sealants increased by 18% and 19% in the east and southwest regions, respectively.
- Dental sealants increased by only 7% in the southeast region.

CONCLUSION

This report is a critical analysis of the oral health of Missouri's children that indicates that many of our citizens have difficulty accessing dental care. The report identifies children most in need of dental services, enables tracking of local and statewide trends in oral health, and provides data to aid in the development of oral health interventions. The report also demonstrates the need to engage communities in addressing critical oral health disparities, as the issues are not simply dental practice problems and no single group can adequately meet the growing needs.

Oral health is the gateway to total health, and is essential to a healthy, productive, happy lifestyle. Tooth decay is the single most common chronic disease of childhood as is indicated when 55% of Missouri third graders have a history of tooth decay. Oral diseases and conditions can detrimentally impact children's growth, function, ability

to learn, and self-esteem. The 2005 survey shows that 12% of Missouri's third and sixth graders missed days of school as a result of tooth pain. There has been no measure yet of how oral disease impacts physical activity and therefore affects obesity rates among Missouri children, but there is growing concern for both issues.

Low-income children have the least access to care. In 2005, the percentage of children needing urgent dental care varied from 2% in higher income schools to 8% in lower income schools. Children of color are less likely to see a dentist in a year than white children. The 2005 survey shows that 55% of African-American children saw the dentist in the previous year as opposed to 62% of white children. Missouri data over the past decade reflect 200–500% increases in the number of emergency room visits due to tooth pain and jaw disorders.

While chronic diseases such as heart disease, diabetes, and oral cancer typically are not seen among children, recent research suggests a relationship between oral inflammation and periodontal (gum) disease and these systemic illnesses. A person with periodontal disease is twice as likely to develop heart disease as one without the oral inflammatory condition. Approximately 95% of Americans with diabetes also suffer from periodontal disease. Expectant mothers with periodontal disease are seven times more likely to deliver babies who are premature and weigh less than normal. Respiratory ailments like pneumonia, bronchitis, and emphysema affect millions of Americans annually and are also affected by periodontal disease. The connection among all these systemic illnesses and periodontal disease seems to be with the bacteria associated with gum disease and the inflammatory process it triggers as the bacteria enter the bloodstream and travel throughout the body, either causing or aggravating changes that affect these conditions. The bottom line is that oral health affects all of us – children and adults alike. The solutions, therefore, need to be community-based, also impacting all of us.

NEXT STEPS

The goal of the Oral Health Program is to facilitate the initiation of community-based, oral health interventions utilizing local partnerships. Those partnerships should consist of local health care professionals and organizations, public health agencies, educators, businesses, social service agencies, faith-based organizations, and other local and regional stakeholders. To equip these partnerships, the Oral Health Program will provide educational materials, oral health surveillance tools and data analysis, supplies for preventive services (fluorides), portable equipment, and technical assistance on community organization/collaboration models.

Pilot projects of the Missouri Oral Health Preventive Services Program have utilized community collaboratives to plan and implement activities to provide educational and preventive oral health services for children. Area dentists and dental hygienists are conducting oral screenings of children in childcare facilities, head starts and in schools

from kindergarten through high school, to quantify the oral health needs and to identify and refer children with the greatest need for dental services. The children are receiving education on brushing and flossing, nutrition that promotes good dental health, and recommended dental treatments based on risk assessment. At the screening, when prior permission has been granted, a fluoride varnish is applied to the teeth as well. The varnish is a protective coating painted on the teeth that helps prevent tooth decay. Those children identified as high risk will receive a second screening and varnish application three months after the initial screening. Noted dental disease will be referred to local dentists and clinics to assure appropriate follow-up care.

Participating communities are raising awareness of oral health issues, emphasizing the impact of poor oral health on their community, and assuming responsibility for meeting the needs of their people. Only participation across the community spectrum will assure increased access to care and improved oral health throughout the community.

Footnotes: ¹National Center for Health Statistics. Current estimates from the National Health Interview Survey, 1996 (Vital and Health Statistics; Series 10, Data from the National Health Survey; no. 200).

Hyattsville, MD: U.S. Department of Health and Human Services, National Center for Health Statistics, 1996.

²Edelstein B, Douglass C. Dispelling the cavity free myth. Public Health Reports 1995, 110:522-30.

³National Center for Health Statistics. National Health and Nutrition Examination Survey III, 1988-94.

Hyattsville, MD: Center for Disease Control and Prevention, unpublished data.

⁴National Center for Health Statistics. Current estimates from the National Health Interview Survey, 1996 (Vital and Health Statistics; Series 10, Data from the National Health Survey, no. 200). Hyattsville, MD: U.S. Department of Health and Human Services, National Center for Health Statistics, 1996.

⁵Vargas CM, Crall JJ, Schneider DA. Sociodemographic distribution of pediatric dental caries, NHANES III, 1988-94. J Am Dent Assoc 1998, 129:1229-38.

⁶Kaste LS, Selwitz RH, Oldakowski RJ, Brunelle JA, WinnDM, Brown LJ. Coronal caries in the primary and permanent dentition of children and adolescents 1-17 years of age: United States 1988-91. J Dent Research 1996, 75:631-41.

⁷Basic Screening Surveys: An Approach to Monitoring Community Oral Health. Association of State and Territorial Dental Directors, 2003. Available at: www.astdd.org.

⁸National Center for Education in Maternal and Child Health. Oral health and learning: when children's oral health suffers, so does their ability to learn. Available at <http://www.mchoralhealth.org/PDFs/Learningfactsheet.pdf>.

⁹Acs G, Lodolina G, Kminsky S, Cisneros GJ. Effect of nursing caries on body weight in a pediatric population. Pediatr Dent 1992, 14:302-5.

¹⁰Kanellis MJ, Damiano PC, Momany ET. Medicaid costs associated with the hospitalization of young children for restorative dental treatment under general anesthesia. J Public Health Dent 2000, 60:28-32.

¹¹Mouradian WE, Wehr E, Crall JJ. Disparities in children's oral health and access to dental care. JAMA 2000, 284:2625-31.

¹²Heller KE, Reed SG, Bruner FW, Eklund SA, Burt BA. Longitudinal evaluation of sealing molars with and without incipient dental caries in a public health program. J Public Health Dent. 1995, 55:148-53.



Oral Health Program

Office of Primary Care and Rural Health

Missouri Department of Health and Senior Services

P.O. Box 570

Jefferson City, MO 65102-0570

1-800-891-7415

www.dhss.mo.gov/oralhealth

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